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ABSTRACT

A study involving eight mentally retarded, multiply handicapped preschool children was conducted to determine whether atypical retarded children could develop their visual spatial and creative expressions to a level which exceeded their deficient curricular level. A base line level of creative ability was obtained for each S and college students participated in a creative arts program on a one-to-one basis with Ss. Data collection consisted of pre and post program drawings, videotapes of children's creative behavior, and questionnaire responses from student teachers. Although one child had to be dropped due to chronic illness, three children showed normal development and three showed remarkable development. One profoundly retarded child failed to develop. (SBH)

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Interdisciplinary Study of Creativity and Behavior: Special Child Development

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Interdisciplinary study has been described by Maas and Kleiber (1976) as "courses which are established in recognition of the shared concerns of different disciplines. Curriculum decision makers frequently assert that greater intellectual benefits are derived from courses which treat knowledge from allied fields simultaneously then from those courses which treat ideas in disciplinary isolation. Another perspective is problem centered education which would join psychology with other disciplines in attacking some problem or issue."

Interdisciplinary courses may take several different forms. Students from one specific discipline may take a course from two or more professors or teachers of different disciplines, or the student population may come from a variety of disciplines for the purpose of relating those disciplines in a superordinate effort.

Closely related to the concept of interdisciplinary study is the notion of multiple measurement of phenomena. According to Webb (1966) "So long as we maintain, as social scientists, an approach to comparisons that considers compensating errors and converging corroborations from individually contaminated outcroppings there is no cause for concern. It is only when we place our faith in a single measure that the massive problems of social research vitiate the validity of our comparisons. We have argued strongly for a conceptualization of method that demands multiple measurement of the same phenomenon or comparison. Overreliance on questionnaire and interview is dangerous because it does not give enough points in conceptual space to triangulate. We are arguing for the employment of novel, sometimes 'odd-ball' methods to give these points in space."

The idea of communicating across disciplines, confronting new perspectives in order to gain new insights in problem solving, and the

concept of inter-related measures of phenomena provided the rationale for an exploratory research project which attempted to utilize the unique contributions of two disparate disciplines--art and psychology--for the purpose of producing problem solutions which might not be obtained from a single discipline. The project was interdisciplinary in terms of the personnel (both arts and social science students participated) and in terms of methods (art materials, were utilized in study of creativity, and Measurements were taken by means of traditional questionnaires and by videotape, (a medium which originated as a creative medium). This paper will describe the study and provide a critical assessment of the concept of interdisciplinary research.

The purpose of the research was to provide an opportunity to study the importance of creative activity in the lives of the atypical multiple handicapped pre-school child with impaired mental functioning. Recent research by Witkin (1966) has indicated that in persons with retarded intellectual development the capacities for creativity, which are a function of the right hemisphere of the brain (Gardner, 1974; Ornstein, 1972; Bogen, 1969) may be more advanced that the left brain abilities which are verbal and mathematical. Evidence to support this is provided by Moroshima (1974) and Lindsley (1965) who describe three different trainable mentally retarded persons whose artistic abilities were developed to a level of superior proficiency. The artists received critical acclaim for their creative works while still existing at an extremely low level of intellectual functioning. It appears that the ability of the individual with retarded development to know and understand his world may be more effective when a visual-synthesistic modality is used rather than a verbal-analytic mode. In order to evaluate such a hypothesis, it was necessary to develop research

methods which crossed the disciplines of art and social science.

While creative development has been studied extensively in the typical child (Lowenfeld and Brittain, 1970; Kellogg, 1969; Gardner, 1973) few attempts have been made to systematically examine its importance on the atypical child. It has been assumed that children with retarded mental development would follow the same stages of growth as the typical child, but at a much slower pace (Harris, 1963; Uhlin, 1972).

Shaeffer-Simmern (1970) believes that artistic activity is natural to all man kind, and that it follows certain developmental paths. Our artistic sensitivity and accomplishment unfold from simple to ever more complex patterns; each single phenomenon is enlarged through successive stages of growth which culminate in the development of the individual's total gestalt. This creative process is considered essential to our developmental achievement and our striving toward complete and mature growth.

Since the end of the last century, measurement of artistic development has received extensive treatment. It has been found that children's art reflects developmental growth on several dimensions: physical, perceptual, motoric, and social, and that their drawings and paintings are a reflection of conceptual maturity (Harris).

Growth is revealed through demonstration of increased sophistication in symbol formation. For example, all children between the years of one and a half to four years move through three phases of scribble drawing. First, the uncontrolled or disordered scribble of dots and lines, which evolves into an elipse and then to a full controlled scribble, culminating in named scribbles which take the forms of suns, flowers, mandalas and eventually the generalization of the human form (Lowenfeld and Brittain).

From scribble stages children progress developmentally through pre-

schematic (early symbol formations), age 4-7, into the schematic stage, age 7-11, where they tell stories with their art.

The study described in this paper was designed to determine whether atypical retarded children could develop their visual-spatial and creative expressions to a level which exceeded their deficient curricular level, providing them a more proficient modality of expression.

THE STUDY

Method

Procedures

Sample: A program of creative activity was recently conducted for the purpose of examining creative development in eight mentally retarded, multiple handicapped pre-school children (5 females and 3 males). The children constituted a convenience sample which ranged from profound to moderate retardation. Characteristics of the children are reported below.

Table 1
Characteristics of the Children

Child	Age	Handicap	Curriculum Age
L X	5 years 6	Psycho-motor retardation, hyperactive, emotionally disturbed	4 years 3
K X	3 years 9	Downs syndrome	3 years
M X	5 years 7	Moderate retardation emotional problems	4 years
C X	5 years	Microcephalic, Downs syndrome, severe gross motor retardation	2 years 10
P XX	4 years 6	Lowe syndrome, partial blindness, severe retardation	1 year 5
Ly XX	4 years 3	Moderate severe brain damage, gross, fine motor damage	1 year 7
E XX	3 years 6	Cerebral palsey, seizure disorder	1 year 4
R XX	4 years 6	Profound retardation	1 year

X = moderate cognitive XX = low cognitive

The curriculum age level had been established by testing the children on a curriculum of eight behaviors considered essential for eventual admittance into public schools. The criteria had been developed by the pre-school teachers under a Federal grant from Health Education and Welfare. Children's behavioral skills were charted on a graph and compared to their chronological ages. (See Figure 1)

The Program

The program was developed in two phases, over a two semester period of time.

Phase 1

The first phase consisted of obtaining a base line level of creative ability for each child. The project director met once a week for a fifteen minute period in an art room away from the special education classroom. Children drew with pencils and crayons and used tempera for paintings. Dozens of drawings and paintings were collected over one semester period. The creative art work was then rated by two judges and their ratings averaged to establish the baseline of creative ability. Criteria for ratings were derived from Lowenfeld and Brittain's model of creative development. The level of ability was then entered on each child's graph and compared to chronological age and curriculum age. (See Figure 1)

Phase 2

During the second semester eight college students who were enrolled in a course entitled Creativity for the Handicapped participated in the pre-school creativity program. The eight students represented the disciplines of both art and social science and were motivated to take the course in order to relate the two disciplines to the particular issue of problem solving in the handicapped population. Each student was assigned

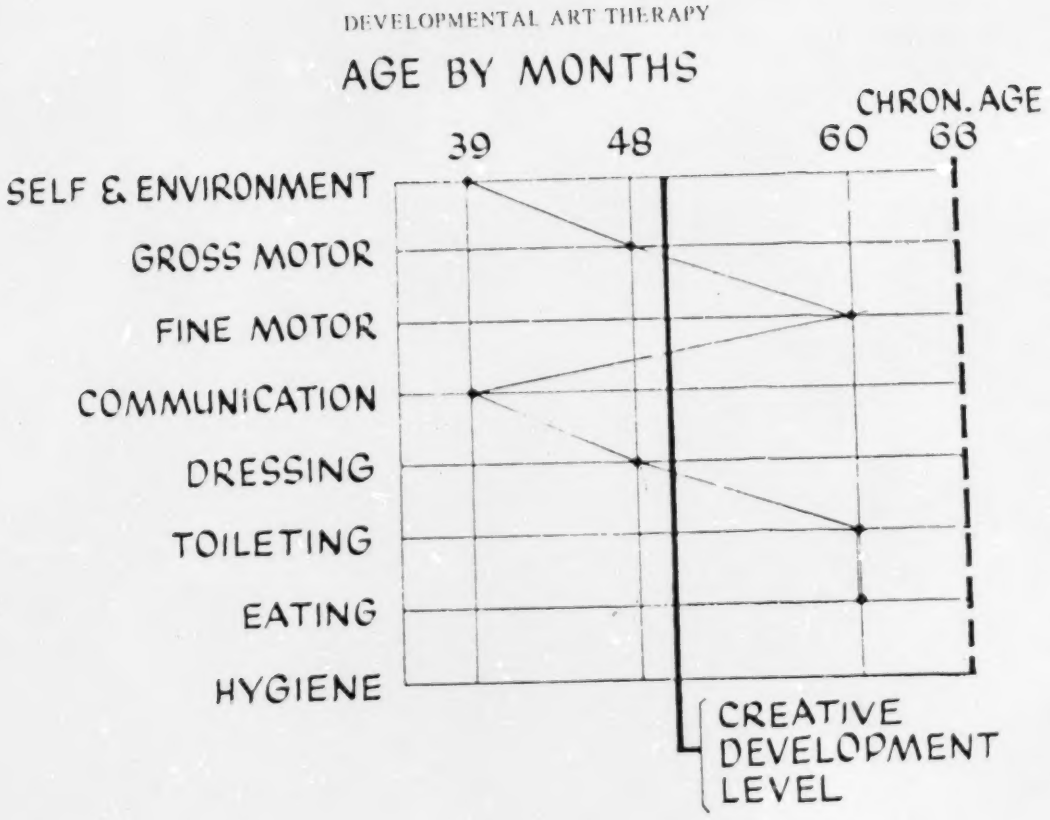

FIG. 1. Chronological, Curriculum and Creative Age Levels.

one child to work with on a one-to-one basis for the semester. They met with their child twice a week for a twenty-minute period each day. Students studied the age levels on the graph and examined the baseline drawings. Each student then designed a creative arts program under the supervision of the course instructor. The art period was divided between free spontaneous art play and a structured art program designed to help the child develop to the next level in Lowenfeld and Brittain's creative development mode. That is, if the child was in the uncontrolled scribble stage, the program was designed to help him achieve the next level, the controlled scribble. Students were responsible for implementation of the program and for participating in evaluation.

The independent variable was the creative arts program. The dependent variables were six measures of advances in creative behavior which have been defined by Lowenfeld and Brittain. They are:

Advance in symbol or schema
Advance in control of the medium
Advance from one stage to the next
Advance in composition
Advance in sophistication of concept
Advance in verbal description of the artwork.

Data Collection

Measurements were designed which responded to Webb's suggestion that converging data gives the most complete support for research findings. Three instruments were designed so that cross comparisons of results could be obtained.

Comparisons and ratings of pre and post program drawings by judges.

Post program drawings were viewed by three judges: the instructor, the student teacher, and a naive viewer. The drawings were rated on a 1-5 scale for advance on criterion and the three ratings averaged. A new level of creative development was plotted on the graph representing

increase in ability and comparisons made between the pre and post creative development stage.

Videotapes of the children's creative behavior.

During the second semester after the structured program had begun, videotape recordings were made of the children during one painting session. At the end of the program a follow up tape was made for comparisons. Observations of the children's behavior on the six criteria were made by the instructor and student teacher.

Questionnaire Responses from Student Teachers.

Student teachers responded to a questionnaire which was designed to elict their attitudes about the children's motivation, enjoyment, and ratings on advances on the criteria of the program.

Variations due to error in measurement were controlled for through a number of considerations. Possibility of the Hawthorne effect operating because of the camera was controlled for by placing the camera and cameraman in a hidden closet, so that the children were unaware that they were being filmed. Situational variations in the environment were controlled by setting up a standardized area which consisted of a corner of an otherwise empty room, which contained an easel, table, rug, and a screen to block out distractions which might come from the window. Differences due to transient personal factors or rater bias were controlled by averaging both the pre and post creative art work.

Rater errors were controlled for by training on the definitions of the concepts which were being rated. Because the sample is non-representational, sampling error could affect results of the study. However, the convenience sample has been defended by Sax (1968) for the purposes of social science research. Validity of measurement was assumed

due to the standardized criteria used to assess the dependent variable (Lowenfeld and Brittain)

Results

Of the eight children in the creative arts program one had to be dropped from final evaluation due to chronic illness. Advances in creative development by months ranged from zero to thirty-three months. Of the four moderately retarded children two had expected normal development. That is, in a seven-month period they developed from five to six months on the criteria. This fact should be considered in relation to the knowledge that the retarded child is expected to develop slower than normal. Two of the moderately retarded children had remarkable development---beyond their chronological age. Of the more profoundly retarded children, the most profound did not develop at all. One child had normal creative development and the other showed remarkable development, placing him close to his chronological age. The results are presented in Table 2.

Table 2
Results of the Creative Arts Program

Child	Creative level in months Pre-Program	Program	X Gain in months	Advancement on six criteria (1-5 scale)	Interest demonstrated by attitude (1-5 scale)	video support
K *	36	42	6	4.10	2.00	X
M *	57	87	30	1.33	1.00	X
C *	43	48	5	3.08	1.00	
L	36	42	6	3.90	1.3	X
P	24	42	18	2.66	1.66	X
Ly *	51	84	33	1.33	1.66	X
R	18	18	0	0.00	2.83	

Differences between mean development levels were subjected to a T-test for significance--T=13.20, (df 12) sig. at .001 level.

The correlations between gains in creative development and student teacher ratings of advancement on criteria was .64. (Pearson-Product Moment)

Videotapes of beginning and end of the second semester.

Videotapes were viewed by the students and instructor for advancement in behavior. Because of the children's absence at various times, a systematic observation schedule could not be attempted. Study of the five children who were present for both tapes demonstrated increased attention span, interest and enjoyment in all of the children. Development on the six criteria were supported as indicated in Table 3.

Table 3
Videotape Observations of Children's Advance on 6 Criteria

Child	Symbol	Control	Advanced Stage	Composition	Concept	Verbal
L	*	*	*		*	
K	*	*	*			
M	*	*	*	*	*	*
P	*	*	*	*	*	*
Ly	*	*	*	*	*	*

* = advance on criterion

It should be noted that the children who scored the largest gains by months of development advanced on all criteria.

Questionnaire Responses from Student Teachers.

Student responses to a questionnaire administered following the program provided attitudinal expressions of the children's interest and motivation. Results can be seen in Table 2, expressed as a mean rating on the three criteria, enjoyment, attention span and interest which each child demonstrated. It can be seen that the children enjoyed the activity as measured by their attention and interest. Students were also asked to rate the importance of the creative arts program to the growth of the mentally retarded handicapped child which they taught. The mean rating of importance was 1.28 on a scale of 1=very important.

Maas and Kleiber state that one of the major problems in interdisciplinary study is the development of a common language and rapport between diverse interests and groups. In order to evaluate the success of the interdisciplinary course from the student's perspective an open response item was placed at the end of the instrument which asked them

to critically evaluate the research program, the course and to suggest changes which could be made in future courses.

The expected variety of answers was obtained. The art students had difficulty adjusting to the psychological vocabulary and too were confused about research procedures. They felt that a smaller class (the eight students were one-third of a larger class) comprised of the members of the research project would have helped them to understand the scientific approach more readily. They were critical of the behavior modification approach used in the special classroom. They had to achieve mastery of behavior modification techniques (even though it was not used in the creativity sessions) in order to maintain a consistent approach whenever they were in the children's regular classroom. The mechanistic environment affronted their "free spirits." They also had difficulty accepting the structured half of the art sessions. At first, they wanted to have the children participate spontaneously in whatever they wished. But very soon, they realized that, with the child of retarded development, structure was needed in order to advance in skills. The psychology students were more comfortable with the course goals and procedures. They were critical of the research design, generally stating that the art periods should be longer, and that the field experience should be over a two semester period. They had difficulty loosening up in the art sessions, and tended to be more structured at first. Gradually the two different approaches were integrated and balanced as the students communicated together and with the instructor over the semester. Over the four months they had grown in their ability to relate the contributions of the two disciplines.

Two themes pervaded the attitudinal reports. Students felt that the

experience had been positive for both the student teacher and the young child. They felt the research project had helped them to clarify values and career goals. Several were going to pursue art for the special child further. Most of the students reported that the program had obviously benefitted the children involved and that was most important.

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